



LOOK INSIDE FOR DETAILS:

- The RARS General Meeting is the 1st Tuesday of each month.
- The RARS net meets every night @ 8 pm on 146.64.
- The RARS Technical and Trader's net is Saturdays @ 8:30 pm or following the RARS net.
- RARS meets for a monthly dinner on the 2nd Tuesday of each month.

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The Raleigh Amateur Radio Society's **EXCITER**

September 2006

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D-STAR of D-Show

**Article by Gary Pearce
KN4AQ (reprinted
from SERA Repeater
Journal, August 2006)**

One thing missing from this year's Dayton Hamvention® was any huge new product announcement. There were some updated radios, some new accessories and stuff, but none of the big guys had anything covered by a black drape until a dramatic announcement on Saturday.

For a select group of hams deeply into repeaters though, the D-STAR system was the big news. I'm going to spend some time here looking at it carefully.

D-STAR is a system for digital Amateur Radio voice and data for VHF/UHF repeater and simplex

operation. It was formulated by JARL, the Japan Amateur Radio League. D-STAR is a combination of ingredients – a digital modulation scheme for voice, a data protocol, and a repeater linking protocol using 1.2 GHz, 10 GHz and the Internet. It's been around for a few years, but this year at Dayton was the first chance many hams had to see some new equipment – mobiles, handhelds, and repeaters – that Icom is producing for the system (see the Icom ad on the back page of the RJ) and to hear about how it really operates.

With a full D-STAR radio and repeater system, you can talk on two-meters, 440 or 1200, send low-speed data on two and 440 while you're talking, and send 128 kbps data on 1200. 128 kbps data



Above: D-STAR hardware getting ready at K4ITL's shop. Photo by Gary Pearce KN4AQ.

isn't quite high speed, but it's way faster than any packet in ham radio operation today, and appears from the 1.2GHz radio as an Ethernet

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Break Out Those Scanners and Shortwave Radios!

**Article by Virginia Enzor
NC4VA**

The semi-annual Tarheel Scanner/ Shortwave Listeners Group's Fall Radio Outing will be held Saturday, September 30 from 3 to 8 PM at Baileywick Park in North Raleigh. Get your radios, antennas, headphones, logbooks, and monitoring guides ready to do some great Dxing! You do not have to be a member of the group to participate. Visit and see what folks are listening to outside the amateur bands. You just might hear international broadcast stations, pirates, clandestine stations, spy numbers stations, aircraft, and more.!



Above: Radio Outing 2005 — DX'er Charlie Broyles demonstrates his radio. Photo courtesy of Virginia Enzor NC4VA.

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The Raleigh Amateur Radio Society

The Raleigh Amateur Radio Society, Inc. (RARS) was founded in 1969 and continues to serve and support the Amateur Radio community in the greater Triangle area. In 1999, the society incorporated a new RARS and obtained 501(c)(3) non-profit tax status.

The objectives of the club are to promote worldwide friendship through amateur radio; to be of public service by providing radio communications in

times of disaster, emergency, or civic need; to educate members in radio technique; and to provide training classes to assist in obtaining amateur radio licenses.

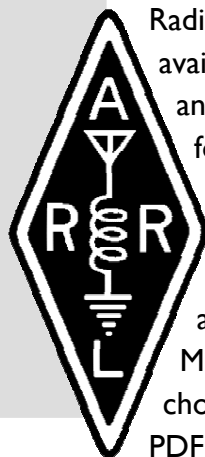
Anyone interested in amateur radio is eligible to apply for membership. Due for regular licensed amateurs are \$18 per year (from July 1 through June 30). Additional immediate family members pay \$5 each per year. Dues for licensed ama-

teurs older than 59 or younger than 16 are \$12 per year. Dues for non-licensed associate members are \$9 per year.

Applications for membership may be obtained from the treasurer or the RARS web site (RARS.org).



The Exciter



The *Exciter* is the monthly newsletter of the Raleigh Amateur Radio Society and is available in both print and electronic formats. The PDF (electronic) version is posted on the RARS website at www.rars.org. Members can also choose to have the PDF version emailed

directly to them by contacting the treasurer. Please contact a member of the RARS Board if you would like to receive a print version of the newsletter.

The *Exciter* welcomes articles, advertising, and other contributions. To submit a piece to the newsletter, please contact the Editor.

The views expressed in the *Exciter* are those of the individual authors and do not necessarily reflect the views of the Editor or RARS. The Editor reserves the right to edit any and all pieces.

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Icom D-STAR is Coming to the Triangle

Article by Danny Hampton K4ITI

For some months now, Rhett KB4HG, Arch KT4AT, Bryson W4JYV, and I have been following with interest the evolution of Icom's D-STAR Amateur Radio Digital Voice and DATA system. Now that Icom is shipping both mobile and portable radios, and voice and digital repeaters, Rhett, Bryson, Arch, and I have decided to personally invest in the repeater infrastructure to further the advancement of the amateur hobby. The result will be wide-coverage D-STAR repeaters that will cover the Triangle area and will eventually link to the D-STAR worldwide network. While this group of hams is also involved in the PCRN system, the D-STAR repeaters will not be part of PCRN.

Frank W4FAL and Arch KT4AT have been assisting in making technical measurements on the performance of the D-STAR equipment so that frequency coordination bodies can work toward determining what frequencies can be coordinated for the new Digital repeaters. Currently on 440 MHz and 1.2 GHz, we will be able to get frequencies coordinated. As to the 2-meter band, that's another issue that is being worked on very hard and was a major topic of discussion at the SERA summer Board of Directors' meeting. In addition, Frank W4FAL, SERA's FCC Liaison, is now engaged in discussions with the FCC as to possible choices for

frequencies to use within the 2-meter band and what is legal, etc. as to proceeding with a modified 2-meter band plan.

The current repeater plan calls for a 440 MHz D-STAR repeater at the 1700-foot level of the Auburn tower, a 440 repeater at the 1000-foot level of the UNC-TV tower at Chatham/Orange county, and a 440 repeater in Greensboro. At some point in time, these repeaters will most likely be connected via the Internet—as the D-STAR repeater controllers allow for this—but it is not the group's intention to initially work on this phase of the project. Other D-STAR repeaters have been ordered for Alabama and Georgia. Some are already operable in Texas and other areas.

All of us who have invested our own money in the repeaters believe that digital voice and data repeaters are what's next for us as amateurs as they take up less than half the current bandwidth of an analog repeater and allow us to do more things in less frequency space. We hope to have repeaters in operation before the end of the year. If you wish to help support the cause with a monetary donation, all of us would appreciate your help.

Cordially,
Danny Hampton
K4ITI

VE Testing

The RARS VEs will accept walk-in testing at the February, May, August, and November RARS meetings; the RARSfest in April; the Cary Swapfest in July; the JARSfest in November; and following RARS license classes.

Please bring a photo ID, your current license, a copy of your current license, and any CSCEs you have for credit. Visit www.rars.org for more information.

RARS General Meeting

Date: First Tuesday of each month

Location: Forest Hills Baptist Church
201 Dixie Trail
Raleigh, NC 27607

Time: People begin arriving at 7 pm.
The meeting officially starts at 7:30 pm.

RARS Monthly Dinner

Join us on the 2nd Tuesday of each month for the RARS dinner. It's open to everyone: RARS members, non-members, friends, and family — feel free to bring your little ones!

Golden Corral @ 6129 Glenwood Avenue in Raleigh. Dinner begins at 6:30 pm.

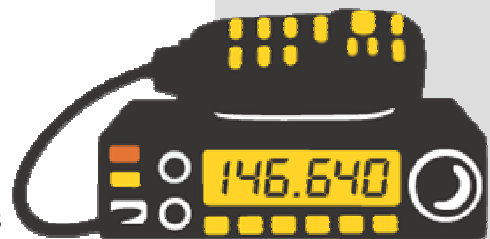
RARS Repeaters in Raleigh

145.13 (82.5 PL)

146.64

444.525 (82.5 PL)

Join us for the nightly RARS net @ 8 pm on the 146.64. All hams holding a Technician class license or higher are invited to check-in. We welcome both RARS and non-RARS members to the net.



President's Corner



**Article by
Dick Bitner
W8HYD,
RARS
President**

It's a warm, dry Saturday — a truly glorious day to be outside — and here I am, composing this month's column. To get me in the mood, I turned on the HF radio and quickly became absorbed with several special events stations, the North American QSO party, a lone Slovak DX station on 20 meters, and numerous light-houses and light ships. (It's both a curse and a blessing to have your station located at your worksite.) I won't bore you with the contact count — as all of you know, I'm not a serious contester — but I couldn't help but think of how many points I would rack up in

the RARS HF Challenge.

I don't know of a hobby that continues to offer so much variety. If I were chasing DX, I would have added 2 new countries to my list, seven new counties, and some rare states, all for just making the call. How easy is that? All for a few hours of mostly listening.

The point is, I don't have an elaborate antenna system up yet. I run 100 watts max into a simple G5RV at 25 feet, and I have a noisy power pole within 75 feet of my antenna. Not at all conducive for big gun contesting but fun to work because of the challenge.

If you have HF capability, try the HF Challenge. I'm finding it to be a lot of fun, even when I'm NOT entering for award consideration. The

rules and check logs are found on the RARS web page along with the link to the HF Challenge. Not able to operate HF? Why not use the forms for SWL activities or NC County hunting? I may even offer a special RARS Certificate for the most unusual use of the log check forms. Paper airplanes do not qualify.

On another front, I want to thank the RARS Board and all those who attended the meeting of the Board in July. I know the decisions we made were not easy, and I was impressed with the professional approach to the issues and the quality of the discussion. I look forward to the coming months with great expectations.

Spread the word about Ham Radio.

73 and have fun with the HF Challenge.

Upcoming RARS Meetings

Mark your calendar for these exciting RARS General Meetings. They will each be on the 1st Tuesday of the month at the Forest Hills Hills Baptist Church. Please see page 3 for details about our meeting location.

September: Dayton Hamvention Tour courtesy of Gary Pearce KN4AQ.

October: RARS Auction. Look for additional information about this annual favorite in the next edition of the *Exciter*.

**Visit the RARS website for up-to-the-minute
announcements, current information, and
special features at www.rars.org.**

Welcome New RARS Members!

Rick
Phillip

KG4KKZ
KG4IVD

Hamfest Calendar

September 2-3	Shelby, NC
September 9-10	Gaithersburg, MD
September 16	Dallas, GA
September 23	New Port Richey, FL
September 24	Cleveland (Berea), OH
September 29-30	Sevierville, TN
October 1	West Friendship, MD
October 7	Brownstown, PA
October 14	Augusta, GA
October 21	Oak Ridge, TN
October 29	Westminster, MD
November 19	JARSFEST @ Benson, NC

Dates courtesy of *SERA Repeater Journal*.

September Birthdays

Chuck	KF4RKD	9/1
Andy	KD4FHF	9/4
Mary Jo	K4MJL	9/5
Lou	K4BYN	9/7
Greg	W4IK	9/7
Greg	N0GE	9/11
John	N4YRB	9/12
Sam	NC4SJ	9/13
Al	KE4IUK	9/13
Fred	AG4WE	9/14
Ken	K7UGT	9/14
Sandy	AC1Y	9/16
Matt	KG4MYD	9/18
Ken	N4ZBB	9/18
Sharon	KD4WTL	9/18
Ken	ND7N	9/20
Rod	KI4LSN	9/20
Lester	KW8T	9/21
Bob	KS4CB	9/24
Larry	KI4FYR	9/24
John	KF4EUZ	9/25
Carolyn	KC4EYK	9/27

July 2006 RARS Net Reports

RARS Two Meter Traffic/Ragchew Net
Check-ins: 452
Traffic: 30/24
Minutes: 756
Sessions: 31

Special Interest Nets
Check-ins: 93
Minutes: 587
Sessions: 10

Cary Hamfest is a Real Picnic!

**Article by Gary Pearce KN4AQ,
RARS Public Information Officer**

The 34th Annual Cary Mid-Summer Swapfest, sponsored by the Cary Amateur Radio Club, rejuvenated itself this year in a picnic shelter and parking lot at the Harold D. Ritter park on the south side of town. I arrived fairly late and could only stay a short time, but it looks like plenty of people found the fest. Admission was free (the fest tag line was "Be Our Guest"). About half the tables in the large picnic shelter were occupied (which cost money, but were in the shade), and all of the spaces in the adjacent parking lot were full (those spaces, and the sunshine, were free). It was hot, as you might expect in mid-July. If I recall correctly, I first encountered the Cary fest in the un-air-conditioned lodge off of Reedy Creek Road in the early 90's. It was free and fun (and hot). The club moved to a nice gym when the town built a new Civic Center and began looking like a



fancy hamfest but eventually that got too expensive. Last year the fest headquartered in the Civic Center parking garage, but even that was unavailable this year.

The back-to-basics picnic shelter will work fine unless there's a big storm. Heavy rain will wash out the parking lot, but the picnic shelter will protect the fest unless it gets windy. With more-or-less outdoor hamfests, you take your chances!

Photos by Gary Pearce KN4AQ



(Continued from page 1)

port. The data stream that accompanies your voice on 2 and 440 is 1200 bps, as fast as most packet in use today. You can do all this through your local D-STAR repeater and to any linked repeater anywhere in the world via the Internet. At the moment, Icom is the only company making D-STAR equipment, but the protocol is open, so anyone can manufacture or homebrew D-STAR-compatible equipment. Some of the other big names in ham equipment have hinted that they have plans to provide products.

That is a very condensed description of D-STAR. For more background, there is the usual ton of material on the web. Begin at www.icomamerica.com and k5tit.org.

What Does D-STAR Mean to Me (and You)?

Until this Hamvention, D-STAR was just an interesting concept to me—part of “the future of Amateur Radio.” Suddenly, the future is much closer than I thought, and I’m about to spend around one k\$ on dual-band mobile and handheld radios because a D-STAR repeater is about to go on the air in my area, courtesy of SERA NC Director K4ITL. Icom sold a bunch of repeaters and radios at Dayton, and D-STAR may be coming to a tower near you, too.

To some hams, this means the sky is falling and it is the End Of Ham Radio As We Know It, according to posts on eham and QRZ.com. Since the end of ham radio as we know it occurs often, I’m not too concerned about that. But there are some practical considerations that will upset some applecarts. I’ll get to them in a minute.

First, what does D-STAR sound like? There were no actual demonstrations going on at Dayton, at least none that I saw. But I did attend a very crowded forum in a downtown hotel on Saturday evening, presented by Jim McClellan N5MIJ and Bill Moore N5ZPR, the Texas Interconnect Team (K5TIT), one of the first groups in the USA to set up D-STAR. They said the coverage of their UHF digital repeater was actually a little better than the analog repeater at the same site. They attributed this to the fact that the D-STAR radio channel is quite a bit narrower than our current analog FM – about 8 kHz for D-STAR vs. 16 kHz for analog FM – so the signal-to-noise potential is better. And the digital signal stays noise-free until the receiver just can’t unscramble the bits it’s getting any longer. So while an analog signal is audible but very noisy, a digital signal of the same strength is “full quieting.” Most of us using cell phones these days are familiar with digital audio, and D-STAR is very similar. At the low signal threshold, there is some garble before the audio cuts off completely. You can hear its an ieces o ta spch efor it sip ers lee ly (translation: you can hear bits and pieces of the speech before it disappears completely. If you could understand the sentence before reading the translation, congratulations – you’re ready for the future of ham radio! Or you’ve gotten used to really bad cell phone service).

D-STAR audio is also a bit lower in fidelity than most of the analog FM we’re used to listening to. This is also pretty much like you hear on cell phones. In order to jam intelligible speech into 8 kHz or less of spectrum, *plus* some low speed data, you’ve got to throw something away. In this case, the low rumble of some of us basso profundo males gets sliced off — a price of progress that future technology will undoubtedly restore.

The K5TIT guys, from the Dallas area, also described their repeater operation on the interconnected network with other early adopters in New York and Seattle. The Internet connection makes linked operation transparent. The audio from the guy in New York sounds exactly the same as the audio from the guy just across town.

They did describe some linking protocol problems that they’re trying to work out with the Japanese hams who designed the D-STAR system, and I’m not sure I got all the details right, but I’ll do my best. You have to program your own callsign into your radio. This was a process that took some of the SERA coordinators just under an hour to accomplish on some D-STAR radios that Alabama Repeater Council Ron Shaffer W4VM brought to the June Board Meeting. To be fair to the coordinators, they were attempting to follow directions from a printed manual, a process for which hams receive no training. Evidently, you also have to program the callsign of the station you want to talk to on a linked system as well, though you don’t have to do this for local conversations, and there are some general “CQ” parameters you can set.

When you do have your callsign programmed, any time you key up, the data-data side of your transmission (as opposed to the voice-data side... it’s all data, after all) sends your callsign. The repeater picks that up and propagates it, along with its own callsign, to the worldwide network of all repeaters connected to D-STAR. All those other repeaters just tuck that information into their back pocket. They don’t broadcast it or anything. Then somebody shows up on the Timbuktu machine and wants to talk to you in Dallas. They plug your callsign into their radio and press the button. Their repeater instantly recognizes your callsign and knows that the last anyone’s heard from you was on the Dallas repeater. So it routes his audio from Timbuktu to Dallas, where it comes pouring out of your speaker.

The problem the Texas guys described was that the tunnel between you and your pal in the wild is there only for the two of you. Everyone on your local repeater can hear him, but they can’t talk back to him unless they program his call in their radio. The Japanese hams, who control the D-STAR linking protocol, had a hard time understanding why everyone wanted to be able to talk to everyone, everywhere. American hams have a hard time understanding why they would *not* want to. I’m sure this will be ironed out soon.

D-STAR in an Emergency

While I’m picking apart the details, the folks deep into D-STAR are promoting its potential in an emergency. What do emergency managers in the devastated field want following a widespread disaster? A few HF radios scattered around? No, they want distributed Internet capability.

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They can bring in a few satellite terminals that give them small pools of connectivity, but how to they spread that around for a few miles?

D-STAR can do that. Plug a 1200 MHz repeater into the satellite box, push the antenna up 50 feet, and you have a 10-mile radius of connectivity at 128 kbps. Not good enough for downloading the latest 50¢ video but plenty good for mostly text-based web pages, large databases, and even pictures of conditions. The two-meter and 440 MHz radios carry that 1200 bps data stream along with voice, more than adequate for sending a list of shelter occupants or supply needs.

D-STAR, SERA, Band Plans, and Coordination

On to the practical considerations. You might want to get a firm grip on the applecart – we're about to shake it some.

The D-STAR system is very cool, but it's based on RF, and RF has to have spectrum. Icom is making D-STAR repeaters for two-meters, 440, and 1200 MHz. They were offering a package deal at Dayton, so a bunch of people who thought they'd just buy a 440 machine ended up with a two-meter machine in the bargain. But what frequency can they put either of them on?

Let me repeat that last sentence: But what frequency can they put them on? D-STAR, or any other digital voice system for VHF/UHF ham radio, may be just a trickle now, but it will eventually become at least a stream, if not a flood. There are problems that SERA and other coordinators will face in finding spectrum for them. First, two-meters is more or less "full" in most areas. Second, digital transmissions cause a loud roar in the speaker of an analog receiver. You don't want a digital repeater on the same frequency of a neighbor analog repeater. Third, putting D-STAR repeaters on conventional channels wastes space, since they take up less spectrum than analog FM. Let's put these interconnected problems under a magnifying glass.

Two-meters is full? It amuses me to say that about a band where, in most areas of the country, including our biggest cities, you can tune from one end to the other and encounter at most a handful of signals. Often you can find no one using the band at all within range of a good mobile station. But on paper, and for the most part in practice, we have repeaters coordinated on all the available frequencies, and as densely as we can, given the helter-skelter way repeaters dotted the landscape over the course of a few decades. Where are we going to put a slew of new D-STAR or other digital mode repeaters?

At the moment, this question is intractable. Two-meters does have some space that is underutilized, and some hams are eyeing it hungrily. The territory between 144.3 and 144.5 has only a few recognized users (APRS on 144.39, and a few ISS uplink channels for voice to the Space Station, with the busy one being 144.49). Then there are a bunch of channels between 145.5 and 145.8. SERA's band plan calls for them to be packet channels. That plan was hammered out in the early 90's when packet was more or less booming. We don't know for sure how busy any of those channels are today, but I suspect the answer is "not very." (Most packet is operating between 144.91 and 145.09. I expect some email from node operators in the 145.5-145.8 segment telling me I'm wrong.)

The problem with those "empty" channels is that the FCC rules prohibit repeaters there. Repeaters are allowed from 144.5-145.5, and 146.0-148.0 only. Some hams have advanced the case that D-STAR repeaters aren't really repeaters, since the data from the input is delayed slightly, reconstructed and altered a bit before it is spit out the transmitter. This same argument was applied to packet "repeaters" in a few areas of the country whose owners wanted to use the prohibited spectrum. I don't know if any packet repeaters are attempting to operate there now, but at the SERA Board Meeting, the coordinators weren't buying the logic. And one FCC official offered an informal opinion that such a "non-repeater" wouldn't pass the "quacks- like-a-duck" test.



Above: Inside a D-STAR repeater—looks just like two mobiles! Photo by Gary Pearce KN4AQ.

A long-term solution is to petition the FCC to open this space for repeaters. That may happen, but it will take years, and there are some complexities. Would analog repeaters be permitted (stand back for the flood)? Do we want to specify only digital repeaters? If so, what parameters do we want to "hard code" into the rules?

For today, we must look at the current crowded channels. SERA's position is that for now, it will coordinate a new two-meter digital repeater only on the existing channels if an open pair is available, but that coordination is subject to change as we test the technology and develop a more comprehensive plan. One possibility being considered: slip a digital repeater between the current analog channels, with a significant amount of geographic spacing. Remember, the digital signals are narrow, and they are pretty clean. No fringing edges creeping up and down the band during

loud, high-pitched syllables. Your analog repeater would have to fend off the weak data signals from users on the edges of its filter skirts. And your mobile or base radio would have to do the same with the digital repeater signal, maybe 50 miles down the road.

If this works at all, it would probably work only in the low end of the two-meter repeater band, where we use 20 kHz channel steps. The digital repeaters would be 10 kHz above or below the current channels and maybe something like 50 miles from the "adjacent channel" neighbor. I think this would only create room for a few repeaters, but it might be all we need for the next few years.

If you can find an unoccupied regular channel – and that can be done with some effort and maybe by confronting someone with a paper repeater that's been off the air a good long time – you might plop a digital machine on that. And I won't be surprised to hear that a few

analog repeater owners decide to change their machine to digital. There are a lot of barely-used repeaters out there, and some owners and users might just get the bug for digital.

The problem with that is their co-channel neighbors. When you listen to a D-STAR or any voice-grade digital signal on an analog FM receiver, you hear a loud roar, like you opened the squelch on an empty channel and turned up the volume (or like you're sitting in the stands at a NASCAR race). But you can't make the roar go away by turning up the squelch any more than you can make an analog signal go away. And it's not a quick burst of noise, like 9600 bps packet. It's continuous, as long as the conversation lasts.

So if you use an analog repeater in your town, and the folks who run the repeater on the same channel 110 miles down the road decide to change over to digital, when the band opens up, you'll hear the roar. If you thought hearing their voices was annoying, the roar will drive you nuts. If you have a carrier access repeater and it starts hearing their user's digital signals, your repeater will repeat the roar. Your option is to put tone on the input and output of your repeater, and use tone decode on your user radios. Many repeaters do this, but we've seen the reaction from the faction that opposes tone when we suggest that they have to.

This problem will start small, in isolated circumstances by the early adopters. But it will grow as interest in digital grows. I don't see a way around it, either. We may be able to segregate digital repeaters to a band segment for a while, if the FCC cooperates quickly. But as time passes, one by one analog repeater owners will want to switch. It's going to take some very creative thinking to figure out how to reconfigure the band plan to make the transition between analog and digital. Or it will just be very messy for a long time.

The problem is not as critical on the 440 band. Again back in the 90's, SERA set aside space for digital (packet) repeaters between 440.025 and 440.725, with corresponding inputs from 445.025 to 445.725. Little of that space has been used, and it's available in SERA territory for digital voice. Other areas of the country have different band plans for those frequencies and may not be quite as ready as we are. When owners of current analog repeaters decide to convert to digital, though, the co-channel conflict will occur. More UHF repeaters and operators are tone-friendly, so maybe the problem won't be as bad up there.

Other Digital Modes?

The emergence of D-STAR has fans of other digital voice protocols yelping on the message boards. In the Public Safety world, something called APCO-25 is the de facto standard for digital modulation. If you have one of the new scanners that let you hear the digital trunking systems, APCO-25 is what they decode. Nobody makes an APCO-25 radio for the ham bands, but it's been in Public Safety use long enough that a few radios are available on the used market, and a few hams have begun using them.

I'm no expert on APCO-25, or D-STAR either, for that matter. I know they're incompatible. I see two bandwidths mentioned for APCO-25 — 6.25 kHz and 12.5 kHz. APCO-25 is designed to send some data for radio ID and such. Maybe it can be configured like D-STAR to be able to send a continuous low-speed data stream along with voice. You'll have to ask the JARL why they decided on a new protocol (not totally new — it's similar to that used on some cell phones).

Alinco was first-to-market with a digital ham radio option. They use something called ITU-TV.32, and open protocol, incompatible with either APCO-25 or D-STAR.

Icom's advantage over APCO-25 and Alinco is that they are implementing a full system and marketing mobile and handheld radios and repeaters ready to go. However, there is nothing to say that D-STAR, APCO-25, ITU-TV.32 and any number of other protocols can't coexist. It will be a bit of a nightmare for users until multi-standard radios are developed, if they ever are. But it will probably happen that way. Will one digital standard ever predominate? Who knows?

Some hams observing the nascent digital phenomenon don't give a flip about standards and protocols. They're whining about having to throw away their old (or new) analog radios and buy new digital radios. Their cries echo down the long halls of history, mingling with the AM ops when SSB appeared, and just touching the raspy buzz of the King Spark contingent who railed against the emergence of CW.

I think I can safely predict that our analog FM radios, which, by the way, are fully compatible with FM equipment developed in the late 1950's, a *half-century ago*, will be usable for a good long time to come. I'm taking a gamble on buying some D-STAR equipment. D-STAR may take off, but it may not. Something else may come along that does more, better, cheaper.... the usual. In fact, I have no illusions that things will stop now. Digital is evolving everywhere — in radios, phones, and on the Internet. Fortunately Icom's digital mobiles and handhelds are dual-mode and will work on analog as well as D-STAR digital. A few years from now, that analog capability may be all that they're good for because some newer, fancier (but incompatible) digital standard turned out to rule the day — while good old analog FM just keeps plugging along.

One thing we've pretty much list the Triangle is the ability to listen to Public Safety radio systems with our ham receivers. Everything in this area, except the Raleigh Police Department, is on an 800 MHz trunking system. Some ham receivers will hear analog 800 MHz systems, but they won't follow the trunking frequency hops. Some local agencies, including the Wake County Sheriff, Raleigh Fire Department, and Morrisville PD are on the state digital VIPER 800 MHz system, so you're completely out of luck there. There are only a few scanners on the market capable of tracking the new digital trunking systems. Nobody's ever been interested in putting a trunking receiver in a ham radio, analog or digital. The APCO-25 camp would be closer to having radios that do ham and Public Safety, and they'd really have a leg up if someone manufactured multi-band ham equipment in APCO-25 that incorporated a digital trunking scanner (yeow!).

Stay tuned for more as "The Future of Amateur Radio" arrives!

Board Meeting - July 2006

Minutes of the RARS Board of Directors Meeting for July 2006

The Board of Directors meeting of the Raleigh Amateur Radio Society was conducted on July 18, 2006 at the Forest Hills Baptist Church located on Dixie Trail.

Attendance: Board –Dick Bitner W8HYD, Hank Montgomery K4HM, Selene Montgomery KG4RMT, Chuck Littlewood K4HF, Mary Jo Littlewood K4MJL, Greg Seamster KE4PAX, Steve Worley KB4HDQ, Gary Pearce KN4AQ and Dick Orander KD4ISC. Others – Charlie Swindell WB4DCM and Rod Thomson KI4LSN.

President Dick Bitner W8HYD, called the meeting to order at 7:30 pm.

On a motion from Hank K4HM and second by Chuck K4HF, the June 2006 Board meeting minutes were approved as presented.

Officers' Reports

Selene KG4RMT provided the Vice President's report.

- The August program will be a video of the Dayton Hamfest FCC Forum provided by Gary KN4AQ.
- The Encore Singers are being scheduled for the December program.

It's time to start planning for the October auction meeting. The September and November programs are still open.

Committee Reports

Webmaster – Steve KB4HDQ reported that he has received a response to our earlier question about accepting donations for advertising / web links on our website. The president of RTP Net (our web host) sees no problem with this idea. Steve will follow up with advertisement possibilities which will be approved by the board before being placed on the RARS webpage.

PIO – Gary KN4AQ advised that he had sent out press releases to the local media for Field Day. He was not aware of any local news coverage of the event.

FM – Gary KN4AQ reported all of the repeaters are in working condition.

Hamfest – Hank K4HM advised he would hold his hamfest comments for the new business portion of the meeting.

Field Day – Dick W8HYD reported that all went well with the club's Field Day activities.

VE team – Dick W8HYD reported that 5 exams were given at the recent Cary Swapfest. Exams will be offered at the August general meeting.

Public Service – Dick KD4ISC thanked the hams that gave up part of the July 4th holiday to provide coverage for the Fire-cracker Bike Ride. There were over 800 riders participating in the event. Local hams also provided coverage of the Triangle Triathlon at Crabtree Lake Park. The MS150 event in September and the Autism Run in October are on the public service horizon.

Board Meeting - July 2006

Unfinished Business

The annual financial review has not yet taken place. It will be scheduled in the near future.

New Business

Hank K4HM advised the Fairgrounds have provided information on our hamfest dates. Our preferred date for the Jim Graham building is not available. The alternate date is available but would conflict with the Gainesville hamfest. The real news is that the building rates are going up by \$500 per day. Based on this year's hamfest results and an estimated continued decline in attendance, the rate increase would probably mean a financial loss for next year's RARSfest. Hank has investigated several alternative sites. These sites are either not suitable or an easy replacement location for our hamfest or scheduling and pricing information are not yet available.

The possibility of an unprofitable hamfest combined with a deficit budget brought about a discussion of ideas to save money at future hamfests and with the club's activities in general. Hank K4HM provided handouts with his ideas and suggestions for such savings. This led to discussions on decreasing the cost of the Exciter (our club's largest expense) and proposals for increasing membership dues. The idea of offering only an electronic version of the newsletter had been discussed many times in the past. It was the general thought of the group that now was the time to move in that direction. A discussion of how those without internet access could be accommodated followed. Hank K4HM made a motion for Greg KE4PAX or his appointee to contact all of the members who currently receive a paper copy of the Exciter and advise them of the need to switch to an electronic version. Printed copies of the newsletter would then be provided only to those who could not receive the electronic version. Steve KB4HDQ provided a second. Discussion followed. Hank amended the motion to read that Dick W8HYD will write an article for the August Exciter to advise this would be the last paper newsletter and that future Exciters will be delivered electronically. Members should provide Greg KE4PAX with email corrections and updates to insure proper delivery. Members who cannot receive the Exciter via the internet can let Greg know and a paper version will be provided for them. Hank called for a vote to be taken. Chuck K4HF provided a second and the vote carried in favor of the motion.

Another cost savings suggestion was to accept donations for refreshments at the general meeting. After discussion, it was agreed to place a donation box at the refreshment table at future club meetings.

Steve KB4HDQ advised he would update the club webpage with information about placing advertisements for a donation to RARS.

The discussion turned back to the hamfest situation. The group agreed to continue the discussion about next year's RARSfest as well as additional cost cutting ideas at a follow up meeting tentatively planned for Tuesday, July 25.

Selene KG4RMT has been approached by a club member for clarification on the rules for posting 'for sale' items on the RARS email list. The group agreed a common sense approach to the frequency and content of posting should be used. Postings are at the discretion of the webmaster and email list coordinator.

Meeting adjourned at 9:35 pm.

Submitted by Dick Orander, KD4ISC, Secretary

Special Board Meeting

Minutes of the RARS Board of Directors Special Meeting for July 2006

A special Board of Directors meeting of the Raleigh Amateur Radio Society was conducted on July 25, 2006 at the Forest Hills Baptist Church located on Dixie Trail.

Attendance: Board – Dick Bitner W8HYD, Hank Montgomery K4HM, Selene Montgomery KG4RMT, Chuck Littlewood K4HF, Greg Seamster KE4PAX, Steve Worley KB4HDQ, Gary Pearce KN4AQ, Johnnie Mayfield WA9SZL, Jeff Wittich AC4ZO and Dick Orander KD4ISC. Others – Rod Thomson KI4LSN and Bobbie Wittich KD4ZVW.

President Dick Bitner W8HYD, called the meeting to order at 7:30 pm. The purpose of this meeting was to discuss the status of next year's RARSfest and to improve the club's operating budget.

Dick W8HYD advised that Hank K4HM and Chuck K4HF have met with the Fairgrounds personnel and evaluated the Exposition building. It is their opinion that this building will be an acceptable location to conduct next year's hamfest. RARSfest 2007 will be held on April 1. While this date conflicts with the Timonium hamfest, it's the best option we have. Dick thanked Hank and Chuck for all their efforts in helping us to secure this new location. He also reported that he has completed and sent an article to the Exciter announcing the change to an electronic version of the newsletter. A brief summary of the need to tighten the budget was also included. There is a lot of work which still needs to be done for the budget.

Hank K4HM was given the floor to report on the new RARSfest location. As announced earlier, we have secured the use of the fairgrounds Exposition building. It is a nice facility with good lighting and plenty of power drops. The lobby has plenty of room and will be used for the social dinner on Saturday night. This area will then be used for testing and additional sales tables on Sunday morning. There are two roll up doors available which can be used for loading / unloading. A new table layout will need to be worked out to maximize the use of the space available.

On a motion from Hank K4HM and second by Jeff AC4ZO, the July 2006 Board meeting minutes were approved as presented. Greg KE4PAX distributed a summary of the club's budgets for the past 6 years. He also reported that there are 39 members without email addresses on file. This may be indicative of the number of printed Exciters that may be needed. He will pursue gathering email addresses from these members as well as for the various organizations that receive our newsletter.

The group began work on revising the budget. After much discussion, it was agreed to modify or drop the following items from the operating budget: meeting expenses, donations, hamfest, Exciter, capital projects (expenses to be addressed as needed) and public service. There was discussion over the need to add email as an official form of notification to the by-laws. No action was taken.

There was a discussion on ways to increase the club's income. Dues increases were mentioned as well as pursuing grants. Steve KB4HDQ advised there is now information on the club's webpage about the availability for advertising on our site for a donation.

Dick W8HYD advised that Bob Conder K4RLC was not interested in handling the QSL cards for the outgoing QSL bureau. Jeff AC4ZO reported he was still willing to help but was unable to attend many of the club meetings. Dick KD4ISC advised he would collect cards at the meetings and pass them off to Jeff for shipment to the bureau.

There was discussion as to whether the updated budget needed to be approved by the membership. Jeff AC4ZO made a motion to approve the modified budget as discussed. Steve KB4HDQ provided a second and the vote carried in favor of the motion. The new budget will be presented to the membership at the August general meeting for approval.

It was decided that the last paper edition of the Exciter would be printed and mailed to everyone who currently is receiving a mailed copy of the newsletter. Dick KD4ISC asked if a paper copy should still be stored in the Secretary's cabinet. It was agreed that a hard copy should be printed and stored. Meeting adjourned at 9:03 pm.

Submitted by Dick Orander, KD4ISC, Secretary

Minutes of the RARS General Meeting for August 2006

The general meeting of the Raleigh Amateur Radio Society was conducted on August 1, 2006 at the Forest Hills Baptist Church located on Dixie Trail. President Dick Bitner, W8HYD, called the meeting to order at 7:30 pm. He announced that exams were being given tonight on the top floor of the church.

KI4PAB was the winner of the door prize which was drawn at the beginning of the meeting. Last month's door prize for KI4NQX was still being held.

Dick Orander KD4ISC thanked the hams who helped with the 4th of July Firecracker bike event. There were over 800 cyclists who participated in the ride. There are two Light the Night walking events coming up on September 9 and 14 in Raleigh and RTP. Bill Cole KG4CXY is coordinating these activities. He can be reached at KG4CXY@hampublicservice.org. Bill is also coordinating a walk for the ADA in RTP on September 30. The MS150 in New Bern is coming up on September 9 and 10. There is always room for radio operators for that event. The club has been approached for support of the Autism Ribbon Run on Saturday, October 14, in downtown Raleigh. Anyone interested in coordinating or volunteering for this event should contact Dick at KD4ISC@arrl.net. On the non-public service side of things, the Cape Fear Amateur Radio Society Swapfest will be held on Saturday, August 12 at Methodist College from 8 am until Noon.

Neal Fisher N4HAF provided a Field Day summary. There were 7768 points earned. The GOTA station was a success and provided bonus points towards our results. There were 48 participants in the event.

Bob Conder K4RLC provided the ARES minute. He reported on the article written by David Crawford KF4VXJ in QST. Bob then reviewed the activities associated with the recent Hurricane Fair and Kid's Day activities.

Dick W8HYD announced that a donation box has been placed on the snack table to help offset the expense of refreshments. He then reported the 10 meter net will be held on Saturday night after the Tech and Traders net on 28.364 MHz. The Skywarn Net will be held tonight on the 146.88 repeater and will include a presentation on the rainfall patterns in tropical systems.

Joe Squashic W4TTO provided an update on the recent NTS traffic training that has been taking place during the 8 pm net. Joe had a certificate of training completion to present to Scott Goodman KI4OCF.

Hank Montgomery K4HM gave an update on RARSfest 2007. The date has been set for Sunday, April 1. The hamfest is being moved to the new Exposition building at the state fairgrounds. The change in location was due to dates of availability and cost savings.

Greg Seamster KE4PAX provided the Treasurer's report. There are 161 members of RARS. It is membership renewal time and those who have not renewed are urged to do so. Greg then reported on the budget revisions that were discussed during a special Board meeting held on July 25. Changes in the budget included a reduction in Exciter costs by producing a very limited number of printed copies and providing everyone with an electronic copy of the newsletter. There were additional reductions in capital expenditures as well as a variety of other categories. The result is a budget closer to being balanced. Greg then asked for the membership to approve the changes. Jeff Wittich AC4ZO made a motion to approve the amended budget. Charlie Swindell WB4DCM provided a second. The vote carried in favor of the motion.

The floor was given to Gary Pearce KN4AQ. Gary provided a video presentation of the FCC Forum meeting conducted by Riley Hollingsworth K4ZDH at the Dayton Hamvention. A brief discussion of the hamvention followed after the video. It was suggested that the membership consider a caravan visit to next year's event.

Attendance - 47. Meeting adjourned at 9:00 pm.
Dick Orander, KD4ISC
RARS Secretary

General Meeting - August 2006

Amateur Radio Nets



The RARS Technical & Trader's net is held on Saturday evenings on the 146.64 after the 8 pm RARS net.

If you would like your net information included in the *Exciter*, please contact the Editor.

Central Carolina SKYWARN

Please join us each Tuesday at 9:15 pm on the 146.88 repeater for the CCS net. On each net there are announcements, check-ins by county, and often a program or training spot.

Upcoming CCS Information nets include:

September 5 — "10th Anniversary of Hurricane Fran" with Rod Gonski, Lead Forecaster with the Raleigh NWS.

September 19 — "NOAA Weather Radio" with NWS Warning Coordination Meteorologist Jeff Orrock KI4KKX.

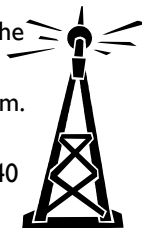
October 10 — "Instability Indices" with NWS Warning Coordination Meteorologist Jeff Orrock KI4KKX.



Check us out at www.ccskywarn.net.

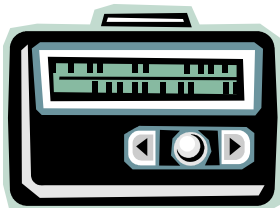
The VOIP Hurricane net is held Saturdays @ 7 pm on the 440 Carolina linking system. To view the list of linked repeaters, go to www.carolina440.net/repeaters_on_link.htm.

The NC VOIP for North Carolina net is also held on the 440 Carolina linking system on Sundays @ 7 pm.



The Wake County ARES net meets Thursdays around

2115 on the 146.88 repeater. We provide discussion and training for the implementation and provision of Emergency Communications for our served agencies, such as the American Red Cross and the local and state Emergency Operations Center. Please join us. www.wakeares.org.



Join the **Tarheel Short Wave Listening (SWL) Special Interest Group (SIG) net** on Monday evenings @ 9 pm on 146.64. We discuss *all* areas of radio monitoring and welcome your logs! We also have a SWL/SIG meeting on the third Monday of the month in addition to our regular net.

Please join us on the **Carolina 440 net** every Monday night at 7:30 pm. This ragchew net utilizes 11 linked repeaters, spanning piedmont and eastern North Carolina. The net will also be connected to the Reflector 921 Channel 1 so other IRLP links can join in on the net.

These are the present frequencies and locations that you can use to access the net:

441.725+ (tone of 100.) Raleigh "Backbone Hub" repeater	
442.075+ (tone of 88.5) Leland	443.075+ (tone of 100.) Clinton
444.150+ (tone of 100.) Clayton	444.325+ (tone of 100.) Holly Springs
444.375+ (tone of 100.) Henderson	444.550+ (tone of 100.) Coats
444.775+ (tone of 100.) Cary	444.775+ (tone of 88.5) Castle Hayne
444.875+ (tone of 100.) Wendell	444.925+ (tone of 100.) Durham



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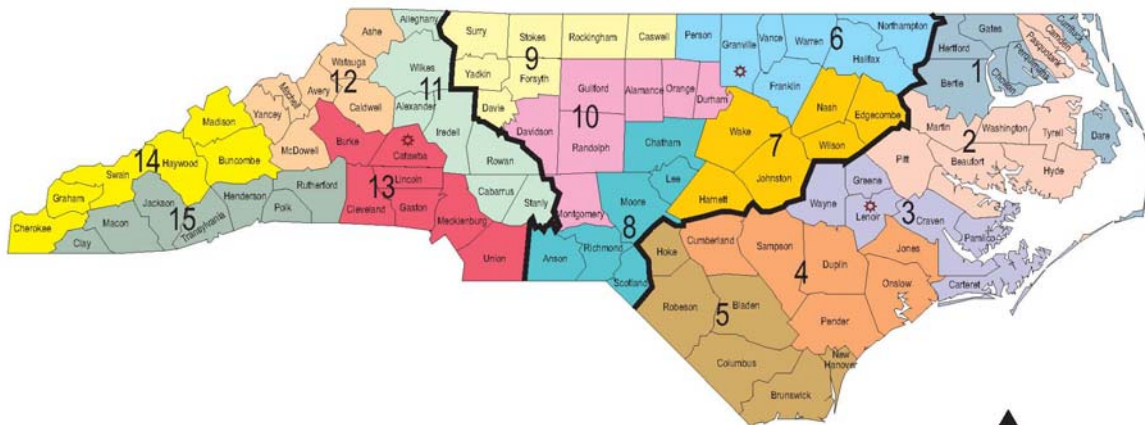
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The RARS
Exciter

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2	Mark Brown
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4	Doug Haas
5	Paula Brown

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7	Alan Byrd
8	Woody Mashburn
9	Joe Wright
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12	Vacant
13	Jeff Cardwell
14	Jimmy Ramsey
15	Danny Gee



View the updated NC Emergency Management/NC ARES map at
<http://www.ncem.org/PIO/Areabndy.htm>. Select the link "CLICK HERE TO SEE MAP."